



Monday AM AP Session 1 **Salon 1/2**

Scattering I

Chairs: R. J. Marhefka and W. C. Chew

- 8:20 UTD Diffraction Coefficient for Dielectric Plate Junctions
Ronald J. Marhefka, The Ohio State University*
- 8:40 SAF Analysis of Shipboard Antenna Performance, Coupling, and Radiation in Complex Near-Field Scattering Environments
B. J. Cowan, GEMTECH Microwaves, Inc., J. P. Estrada, Georgia Tech
- 9:00 Scattering from a Conducting Cylinder Shielded with a Dielectric Bead
Kaveh Heidary, Matrix Technologies, Jay K. Lee, Arlon T. Adams, Syracuse University*
- 9:20 Electromagnetic Scattering From Corrugated Cylinders
G. Manara, A. Monorchio, Univ of Pisa, G. Pelosi, R. Caccioli, Univ of Florence*
- 9:40 Reduction of TM-Scattering From a Conducting Cylinder by Multiple Surface Impedance Loadings
Yin HongCheng, Ruan YingZheng, Deng ShuHui, University of Electronic Science and Technology of China*



10:00 BREAK



- 10:20 Fast Far Field Approximation for Calculating the RCS of Large Objects
C-C. Lu, W.C. Chew, University of Illinois*
- 10:40 The Mode Matching Technique for Electromagnetic Scattering by Cylindrical Waveguides with Canonical Terminations
Hristos T. Anastasiou, John L. Volakis, University of Michigan*
- 11:00 Overlapping Geometric and Modal Symmetries in Jet Engine Scattering and Modulation
Daniel C. Ross, John L. Volakis, Hristos T. Anastasiou, University of Michigan*
- 11:20 Physical Optics Analysis of Rotating Blades in a Cylinder
K. K. Chan, Chan Technologies Inc., F. Tremblay, S. Laird, Defence Research Estb. Ottawa*
- 11:40 Mode Matching Analysis of Metallic Blades in a Cylinder
K. K. Chan, Chan Technologies Inc., F. Tremblay, Defence Research Estb. Ottawa*
- 12:00 A Two Dimensional Shapedbeam Antenna
Lu Jiaguo, Tan Jizhao, Wan Xiaogang, East China Research Institute of Electronic Engineering



Monday AM AP Session 2 **Salon 3**

Finite Elements

J. Volakis and V. Jamnejad

- 8:20 Triangular Prisms for Edge-Based Vector Finite Element Analysis
Tayfun Ozdemir, John L. Volakis, University of Michigan
- 8:40 Higher-Order Vector Finite Elements for Tetrahedral Cells
J. S. Savage, A. R. Peterson, Georgia Institute of Technology*
- 9:00 The Dispersive Behavior of Triangular Edge Elements in the Finite-Element Method
Gregory S. Warren, Waymond R. Scott, Jr., Georgia Institute of Technology*
- 9:20 Domain Decomposition Eigenvalue Solver for Finite Element Mode Computation in Air-inlet
A. Barka, A. Cosnua, F. X. Roux, ONERA
- 9:40 Analysis of Electromagnetic Transmission through a Choke using FE-BIM with Arbitrary Incidence Angle/Polarization
Eungsu Kim, Byungsung Kim, Sangwook Nam, Seoul National University

10:00 BREAK

- 10:20 Eliminating Spurious Solutions of Dielectric Waveguides: Computational Performance of the Reduced Integration Penalty Method
M. B. F. Chaves, LNCC - CNPq, C. G. Migliora, CETUC - PUC/Rio, H. J. C. Barbosa, LNCC - CNPq, Rio de Janeiro*
- 10:40 Investigation of Adaptive Absorbing Boundary Condition for Finite Element Solution of Three-Dimensional Scattering
Jian-Ming Jin, Ninglong Lu, University of Illinois*
- 11:00 Electrostatic Solution for Three-Dimensional, Arbitrarily-Shaped Conducting Bodies Using FE-MEI
John H. Henderson, Auburn University
- 11:20 Two Novel Schemes for Truncating Finite Element Meshes
Jian Gong, John L. Volakis, University of Michigan*
- 11:40 Comparative Evaluation of Absorbing Boundary Conditions Using Green's Functions for Layered Media
M.I. Aksun, Bilkent University, G. Dural, Middle East Technical University*





Monday AM AP Session 3 **Salon 4**

Adaptive Antennas I

R. J. Mailloux and Y. Karasawa

- 8:20 Experiment with a Multibeam DBF Antenna Mounted on a Vehicle by Receiving a Satellite Signal

R. Miura, T. Tanaka, I. Chiba, A. Horie, Y. Karasawa, ATR Optical and Radio Communications Research Lab*

- 8:40 ASIC Implementation of DSP for Beam Space CMA Adaptive Array Antenna in Mobile Communications

T. Tanaka, R. Miura, I. Chiba, Y. Karasawa, ATR Optical and Radio Communications Research Lab*

- 9:00 Covariance Matrix Augmentation to Produce Adaptive Array Pattern Troughs

R. J. Mailloux, Rome Laboratory, Hanscom AFB

- 9:20 Direction Finding with Compensation for a Near Field Scatterer

Edward Michael Friel, Krishna Murthy Pasala, University of Dayton*

- 9:40 An Optimum Radar Signal Detector Using Orthogonal Projection

Y. H. Kim, S. T. Kim, Samsung Electronics, J. Lee, University of Inchon, K. M. Kim, D. H. Youn, Yonsei University*



- 10:00 BREAK



- 10:20 Performance Analysis of Antenna Array in Terms of SNR/SIR and Number of Antenna Elements

D. Yun, S. Choi, Hanyang University*

- 10:40 Superbroadband Full Azimuth Coverage Polarization Surveying Array

Liang Tiesheng, Feng Yan, Electromagnetic Science Institute*

Monday AM AP Session 4 **Salon 5**

Space Antennas and Arrays

M. Herman and T. Milligan

- 8:20 A Comparison Between Reflector and Active Array Satellite Antennas With Contour Beams

Erik Lier, Alan Cherrette, Martin Marietta Astro Space*

- 8:40 A Study of Sidelobe Suppression of Active Array Satellite Antennas with Contour Beams

Erik Lier, Alan Cherrette, Martin Marietta Astro Space*





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- 9:00 Passive EVA Tracking System Using a Pair of 3-Element Microstrip Patch Arrays
B. Bourgeois, D. Arndt, I. Paz, M. Chavez, NASA Johnson Space Center*
- 9:20 A Study on the Isolation Capability of Multi-Beam Reflector Antennas
H-H. Viskum, TICRA, K. Tjonneland, INTELSAT*
- 9:40 Array Fed Contoured Beam Antenna Optimization With Frequency Variable Excitations
J. Uher, S. Richard, Spar Aerospace Ltd.

10:00 BREAK

- 10:20 Compact Dual Band Feed for Mars Global Surveyor
T. Milligan, Martin Marietta Astronautics*
- 10:40 Design and Optimization of a Compact Ka-Band Antenna Diplexer
J. Esteban, J.M. Rebollar, Universidad Politecnica de Madrid*
- 11:00 A Novel Compact OMJ for Ku-Band Intelsat Applications
Walter Steffe, Alenia Spazio
- 11:20 An Elliptical Corrugated Horn Model for Radiation Pattern Predictions
Erik Lier, Martin Marietta Astro Space
- 11:40 A Practical Method to Design a Corrugated Horn for Radiometric Applications
Peter Foldes, Foldes Inc., Fabio Massimo Marinelli, Alenia Spazio



Monday AM AP Session 5 Salon A

Broadband Antennas

C. A. Balanis and G. S. Smith

- 8:20 Transmission and Reception of Pulsed Signals Using Wideband Exponentially Tapered Slotline Antennas
Cam Nguyen, C. L. Lau, T. Scullion, Texas A&M University*
- 8:40 Linearly Tapered Slot Antenna Impedance Characteristics
Rainee N. Simons, Richard Q. Lee, NASA Lewis Research Center*
- 9:00 The Flared Coplanar Waveguide Traveling Wave Antenna
W.E. McKinzie, T.L. Anderson, Northrop Grumman*
- 9:20 Multi-Octave Phased Array for Circuit Integration using Balanced Antipodal Vivaldi Antenna Elements
J.D. S. Langley, P. S. Hall, The University of Birmingham, P. Newham, Marconi Defence Systems*





- 9:40 On the Characteristic Impedance of TEM Horn Antennas
James G. Maloney, Georgia Tech Research Institute, Glenn S. Smith, Georgia Institute of Technology*

10:00 BREAK

- 10:20 EQUIANGULAR MICROSTRIP SPIRAL ANTENNAS
Shih-Chang Wu, New Jersey Institute of Technology
- 10:40 An Eccentric Sprial Antenna Printed on a Dielectric Substrate
K. Hirose, Shonan Institute of Technology, H. Nakano, Hosei University
- 11:00 Wideband Circularly-Polarized Rhombic Loop Antennas with Different Feed Models
H. Morishita, T. Iizuka, National Defense Academy, K. Hirasawa, University of Tsukuba, T. Nagao, National Defense Academy, Japan*
- 11:20 A Comparison of Several Broadband Loaded Monopoles for Pulse Radiation
Thomas P. Montoya, Glenn S. Smith, Georgia Institute of Technology*
- 11:40 An Approximate Modal Solution to the Ultra-Wide-Band Bowtie Antenna
Qiang Zhang, Nanjing Research Institute of Electronics Technology



Monday AM AP Session 6 Salon D



Time Domain Numerical Methods (FDTD) I

Jeffrey L. Young and Magdy F. Iskander

- 8:20 Another New FDTD Method for Linear Dispersive Media - But This One's the Best Yet
Steven A. Cummer, Stanford University
- 8:40 Frequency-Dependent FDTD Method Applied to Optically-Controlled Dielectric Waveguide
R.G. Farias, Federal Unviersity of Para, A.J. Giarola, State University of Campinas*
- 9:00 Dispersion Analyses of FDTD Schemes Associated with Dispersive Media
J.L. Young, A. Kittichantphayak, Y.M. Kwok, D. Sullivan, University of Idaho*
- 9:20 FDTD Simulation of High-Intensity, Ultrashort Laser Pulses for X-ray Generation
Dennis Sullivan, University of Idaho
- 9:40 Obtaining High-Performance Time-Domain Characteristics from Calculated S-Parameters for Various Electronic Package and Interconnection Structures
Paul C. Cherry, Magdy F. Iskander, University of Utah*





10:00 BREAK

- 10:20 TEM Horn Antenna for Pulse Radiation: An Optimized Design
Kurt L. Shlager, Glenn S. Smith, GIT, James G. Maloney, Georgia Tech Research Institute*
- 10:40 3D Sub-Gridding Algorithm for FDTD
M. Okoniewski, E. Okoniewska, M. A. Stuchly, University of Victoria*
- 11:00 An Improved FDTD Method for Analysis of Higher Order Modes High Q Dielectric Resonators
C. Wang, H-W. Yao, K. Zaki, University of Maryland*
- 11:20 A Circular Mesh Scheme for the Non-Orthogonal Finite Difference Time Domain Method
P.Y. Chung, C. Wu, McMaster University, E.A. Navarro, Universitat de Valencia, J. Litva, McMaster University*
- 11:40 An Efficient Source Formulation for the Analysis of Microwave Circuits Using the FDTD
Achim Bahr, Institut fur Mobil-und Satellitenfunktechnik, Andreas Lauer, Ingo Wolff, Gerhard-Mercator-Universitat



Monday AM AP

Session 7

Salon F



Nearfield Measurements

S. Blanch and O. M. Bucci

- 8:20 Phaseless Bi-Polar Near-Field Measurements Using a Two-Plane Squared Amplitude Interpolation Algorithm
R.G. Yaccarino, Y. Rahmat-Samii, UCLA*
- 8:40 Absorber-Loaded Planar Waveguide Array Antenna for Compact Range Application
Katsumasa Miyata, Akita National College of Technology
- 9:00 Efficient Near-Field - Far-Field Transformation with Cylindrical Scanning by a Finite and Non Redundant Number of Data
O.M. Bucci, Universita di Napoli, C. Gennarelli, G. Riccio, V. Speranza, Universita di Salerno, C. Savarese, Instituto di Teoria e Tecnica delle Onde Elettromagnetiche*
- 9:20 Comparison Between Classical and Equivalent Current Approach Near-Field to Far-Field Transformation
S. Blanch, Ll. Jofre, J. Romeu, Universitat Politecnica de Catalunya*





- 9:40 Probe Positioning Errors in Planar Near Field Measurements. A Plane Wave Synthesis Approach
J. Romeu, P. Escobar, S. Blanch, Universitat Politecnica de Catalunya*
- 10:00 Study of Automatic Measurement System for High Temperature Superconductor Antenna
X. M. Qing, L. Y. Shen, J. Lu, Q. S. Zhang, Z. X. Luo, Z. X. Tang, University of Electronic Science and Technology of China

Monday AM AP Session 8 Trimaran/Brigantine

Terrestrial and Tropospheric Propagation and Scattering
Eikichi Asari and Sherman Marcus



- 8:20 Attenuation of Satellite Microwave by A Cumulonimbus
Eikichi Asari, Hokkaido College of Arts and Sciences
- 8:40 Characteristic Changes in Cross-Polarization Discrimination due to Thunderclouds on Satellite-to-Ground Path
Yasuyuki Maekawa, Nion Sock Chang, Akira Miyazaki, Toshitaka Kojima, Osaka Electro-Communication University*
- 9:00 The Propagation Effects of Bends in Tropospheric Ducts
Sherman W. Marcus, RAFAEL
- 9:20 Electromagnetic Wave Radiation Outside the Tunnel
Y. P. Zhang, Y. M. Hwang, The Chinese University of Hong Kong*
- 9:40 Radar Recognition of Hail Areas
F.J. Yanovsky, Kiev International Univ. of Civil Aviation, A.B. Shupiatsky, Central Aerological Observatory, I.P. Kapitalchuk, Moldavian Anti-Hail Service*
- 10:00 BREAK
- 10:20 Algorithms of Atmosphere Turbulence Detection with Airborne Weather Radar
I.G. Prockopenko, F.J. Yanovsky, Kiev International University*
- 10:40 The MMW Beam Field Behind Obstacle in Wave Zone
G.A. Andreyev, G.A. Gladyshev, IRE RAS*
- 11:00 Diagnostics of Plasmapause by Effect of MF Radio Waves Guiding
D. V. Blagoveshchensky, State Academy of Aerospace Instrumentation, Russia*





Monday AM Joint Session 1**Salon B****Wavelets in Electromagnetics I***A. Chan and H. Ling*

- 8:20 Linear Frequency Modulated Signal Detection using Wavelet Packet, Ambiguity Function and Radon Transform

Minsheng Marshall Wang, Andrew K. Chan*, Charles K. Chui, Texas A&M University*

- 8:40 A Fast Multiresolution Moment Method Algorithm Using Wavelet Concepts

H. Kim, Hanyang University, H. Ling, The University of Texas, Austin*

- 9:00 Characterization of Microstrip Patch Antennas Based on the Two-Dimensional Wavelet Theory

Kazem F. Sabet, Linda P.B. Katehi, University of Michigan*

- 9:20 Super-Resolved Parameterization of Dispersive Scattering Mechanisms in the Time-Frequency Plane

L.C. Trintinalia, H. Ling, University of Texas, Austin*

- 9:40 Time-Frequency Representation of Wideband Radar Echo Using Adaptive Normalized Gaussian Functions

L.C. Trintinalia, H. Ling, University of Texas, Austin*

- 10:00 BREAK



- 10:20 Resolution Enhancement and Small Perturbation Analysis using Wavelet Transforms in Scattering Problems

Z. Baharav, Y. Leviatan, Technion - Israel Institute of Tech.*

- 10:40 On the Use of Wavelet-Like Basis Functions in the Finite Element Solution of Elliptic Problems

Richard K. Gordon, University of Mississippi, Jin-Fa-Lee, Worcester Polytechnic Institute*

- 11:00 New Wavelet-Like Basis Functions for the 2D Mode Analysis of Coupled Microstrips

K. Blomme, D. DeZutter, H. Devos, University of Ghent*

- 11:20 A Hybrid Wavelet Expansion and Boundary Element Method in Electromagnetic Scattering

Gaofeng Wang, Tanner Research, Inc. Jiechang Hou, Wuhan University*



Monday AM Joint/URSI-B Session 2 Salon C

Microstrip Antenna Design and Analysis

L. Shafai and K. Chang

- 8:20 The Effect of Air-Bridges on the Mode Supression of Asymmetrical CPW-FED Slot Antennas

Chung-Yi Lee, Tatsuo Itoh, University of California at Los Angeles*

- 8:40 Tolerance Effects on Low-Cost Printed DBS Antennas

Manuel Sierra, Universidad Politecnica de Madrid, George Jankovic, Boulder Microwave Technologies, Inc.

- 9:00 Alternate Cutoff Radius Criterion for Probe-Fed, Circular Microstrip Patches

D. Chatterjee, R. G. Plumb, University of Kansas

- 9:20 Design of 24 GHz Microstrip Travelling Wave Antenna for Radar Application

H. Moheb, InfoMagnetics, L. Shafai, University of Manitoba, M. Barakat, InfoMagnetics*

- 9:40 An Electromagnetically Coupled Microstrip Antenna with a Rotatable Patch

Atsuya Ando, Yasunobu Honma, Kenichi Kagoshima, NTT*

- 10:00 BREAK

- 10:20 Ka-Band Aperture Coupled Microstrip Antenna with Image Line Feed

Ming-yi Li, Sridhar Kanamaluru, Kai Chang, Texas A&M University*

- 10:40 Scattering and Radiation by Conformal Microstrip Antennas with Dielectric Overlay

Leo C. Kempel, Mission Research Corporation, James T. Aberle, Arizona State University*

- 11:00 Design and Analysis of Slot Array Antennas on a Radial Feed Line

M. Sierra, J. Redoli, Universidad Politecnica de Madrid, M. Vera, A.G. Pino, Universidad de Vigo*

- 11:20 Slotline Antenna with Non-Leaky Coplanar (NLC) Waveguide Feed

Yaozhong Liu, Chung-Yi Lee, Tatsuo Itoh, University of California, Los Angeles*

- 11:40 Applications of Planar Multiple-Slot Antennas for Impedance Control, and Analysis Using FDTD with Berenger's PML Method

H.S. Tsai, R.A. York, University of California at Santa Barbara*



Monday AM Joint/URSI-E Session 3 Salon F

Coupling and Shielding*J. L. Drewniak and W. P. Wheless*

- 8:20 Development of Statistical Electromagnetics (STEM) Techniques
W. P. Wheless, University of Alabama, C. B. Wallace, BDM Federal, Inc., W. E. Prather, Phillips Laboratory*
- 8:40 Analysis of Coupling Through Shielded Apertures
Steven P. Castillo, New Mexico State University, Hector DeAguila, Thomas Loughry, Phillips Laboratory*
- 9:00 On the Protection Against EM Leakage from ITE
Fang Han, Linchang Zhang, Northern Jiaotong University*
- 9:20 Shielding Enclosure Radiation Enhancement Due to Attached Cables
D. M. Hockanson, J. L. Drewniak, T. H. Hubing, T. P. Van Doren, University of Missouri-Rolla*
- 9:40 High Intensity Radiated Field (HIRF) Penetration in Helicopters
Panayiotis A. Tirkas, Constantine A. Balanis, William V. Andrew, Arizona State University, George C. Barber, NASA Langley Research Center
- 10:20 Coupling Prediction of HF Antennas Mounted on Helicopter Structures Using the NEC Code
Jian Peng, Constantine A. Balanis, Arizona State University



Monday AM URSI-B Session 1 Catamaran

Guided Waves*T. K. Sarkar and E. W. Lucas*

- 8:20 Plane Wave to Coaxial Waveguide Coupling through an Aperture, using modal expansions in the interior and exterior domains
S. Marteau, B. L. Michelsen, ONERA*
- 8:40 Analysis of a Coaxial-line Probe Junction to Cylindrical Cavity Filled with a Lossy Dielectric
Richard B. Keam, Adrian D. Green, The New Zealand Institute for Industrial Research and Development*
- 9:00 An Analysis Approach for Large Planar Arrays Using a Bound FDTD Model
Maria Gustavsson, John Sanford, Chalmers University, Magnus Sundberg, Swedish Institute of Food Research*





- 9:20 Analysis and Design of Orthogonal Mode Couplers in Rectangular Waveguides
Luiz Costa da Silva, Pontificia Universidade Catolica de Rio de Janeiro, Emilio Abud Filho, M. G. Castello Branco, CPqD/Telebras
- 9:40 The Equivalent Circuit for the Junction between Curved and Straight Waveguides
Horacio Tertuliano, Federal University of Ceara, Pierre Jarry, Bordeaux I University
- 10:00 BREAK
- 10:20 Wave-Field Patterns on Electrically Large Networks
Ross A. Speciale, Redondo Beach, CA
- 10:40 Computer-Simulation of Isotropic, Two-Dimensional Guided-Wave Propagation
Ross A. Speciale, Redondo Beach, CA
- 11:00 A New Edge Element Method for Dispersive Waveguiding Structures
Guangwen Pan, Jilin Tan, University of Wisconsin, Milwaukee*
- 11:20 OHMIC Loss of Metal-Dielectric Waveguides with Ridges
Alexander Ye. Svezhentsev, Ukrainian Academy of Sciences
- 11:40 Two-Channel Waveguide Modulator Based on the Surface Eigenmode of the Semiconductor-Metal Interface
K. N. Ostrivov, N. A. Azarenkov, O. A. Osmayev, Kharkov State University & Scientific Centre for Physical Technologies*
- 12:00 High-Q Disk Dielectric Resonators
V. S. Dobromyslov, V. I. Kalinichev, A. V. Krjukov, Moscow Power Engineering Institute*



Monday AM URSI-B Session 2 Salon E

Transients

S. L. Dvorak and P. H. Pathak

- 8:20 Analytical Treatment of Transient Radiation from Pulse Excited Parabolic Reflectors
H. T. Chou, P. H. Pathak, P. R. Rousseau, Ohio State University*
- 8:40 Antenna Parameterization in the Time Domain
Amir Shlivinski, Ehud Heyman, Raphael Kastner, Tel-Aviv University*
- 9:00 Transient Pulse Focusing by a Lens: Analytical and Numerical Analyses
Steven L. Dvorak, Richard W. Ziolkowski, University of Arizona*





- 9:20 A New Method for the Wideband Protection of Ultra-fast Pulse Generators Against Reflections From Unmatched Antennas
M. Piette, E. Schweicher, Royal Military Academy Brussels, A. Vander Vorst, Univ. Cath. de Louvain*
- 9:40 Design of Reflectionless Slabs for Obliquely Incident Transient Plane Waves
Rasmus Hellberg, Royal Institute of Technology

Monday AM URSI-B Session 3 Schooner/Sloop

Antennas I

R. L. Fante and H. Steyskal

- 8:20 Analysis of a Diversity Antenna Using FDTD Method
Mark Douglas, Michal Okoniewski, Maria A. Stuchly, University of Victoria*
- 8:40 Mobile SMM Antennas with Pattern-Diversity and Dual-Mode Operations
J. J. H. Wang, J. K. Tillery, Wang-Tripp Corporation*
- 9:00 Numerical Modeling of an AM/FM Automotive Windshield Slot Antenna
E. Walton, R. Abou-Jaoude, M. Pekar, The Ohio State University*
- 9:20 Array Pattern Synthesis in the Presence of a Near-Zone Scatterer
Hans Steyskal, Rome Laboratory/ERAA
- 9:40 Reducing the Off-Boresight Fields of a Broadband TEM Horn
D. J. Wolstenholme, A. J. Terzuoli, G. C. Gerace, Air Force Institute of Technology
- 10:00 BREAK
- 10:20 Low Cost Steerable Beam HF Linear Array Antenna of Subarrays for a Prototype Ground Wave Radar
S. A. Saoudy, R. Khan, R. Davis, Memorial University of Newfoundland*
- 10:40 Circularly Polarised Dielectric Resonator Antenna: Analysis of near and Far Fields using FD-TD Method
Karu P. Esselle, Macquarie University
- 11:00 Extending a Neural Network Surface Error Compensation Algorithm to Distorted Paraboloidal Reflector Antennas
W. T. Smith, S. Y. Cheah, University of Kentucky*
- 11:20 Beam Synthesis of Conformal Arrays
John P. Casey, Naval Undersea Warfare Center Detachment, Roy L. Streit, Naval Undersea Warfare Center*
- 11:40 Adaptive Cancellation of Multiple Mainbeam Jammers
Ronald L. Fante, Richard M. Davis, Thomas P Guella, The MITRE Corporation*





12:00 Superdirective in Statistical Antenna Theory
Y. S. Shifrin, V. V. Dolshykov, Kharkov State Technical University of Radio Electronics*

